

REMARKS

Claims 1-12 are presently pending in the application. Claims 1-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Application No. 2005/0152546 ("Kangas") in view of U. S. Patent Application No. 2002/0150115 ("Onvural") and in view of U. S. Patent Application No. 2005/0090235 ("Vermola").

It is respectfully submitted that claims 1-12 and newly added claims 13 and 14 are patentable over the cited art for at least the following reasons.

As taught in the present invention, although PCR values are crucial for locking of the clocks, the usefulness of the PCR values is highly dependent on their accuracy, which can be substantially degraded as MPEG packets become jittered due to transport across digital networks with variable delays. Packet jitters that exceed the specifications, which can still be tolerated by the video receivers 105, could result in macro blocking and interruption or loss of video at the display device 106. Therefore, it is highly desirable to minimize the packet jitter as much as possible at the output of the transport equipment 104. Accordingly, one of the key functions of the transport equipment 104 is to dejitter the MPEG-2 packets before transmitting the packets to the video receivers 105. In accordance with the present invention, therefore, the dejitter process improves the accuracy of the PCR values embedded in the MPEG-2 PCR packets.

In this manner, claim 1 is directed towards an apparatus that controls the output rate of a plurality of packets, thereby improving the accuracy of the PCR values. At the output of the transport equipment, a packet processor retrieves buffered packets and places them in one of a plurality of time-sliced queues. The time-sliced queues are comprised of individual time indexes where each index corresponds to an output time. Therefore, depending upon the packet's egress time, each packet is placed in an index, and a queue manager subsequently removes each packet from the indexes and transmits them accordingly.

Kangas does not discuss or teach packet dejitter, but rather how to descramble multiple streams with a single descrambler. There is no discussion or implication in Kangas on how to improve the accuracy of PCR values that are embedded in the packets. More specifically, Kangas discusses combining two or more streams into a single stream comprising packets in order to be descrambled. As taught in Kangas, a packet is taken from each stream in a round-robin fashion and combined with other packets from other streams to provide a single stream. After the single stream is processed, the packets of the single stream are separated to form the one or more original streams. Therefore, buffers and buffer managers are required in order to accomplish combining the packets into the single stream. The timing is based on the rising and falling edges of a clock. If more streams are present for descrambling, there may be a requirement for a more sophisticated timing; however, there is no teaching or implication on using a packet's output time. It is respectfully submitted that Kangas is interested in continuously presenting a

single stream of packets in some particular order to a descrambler and subsequently separate the single stream in the same particular order in order to present the original streams.

It is believed, therefore, that there is no motivation to combine Kangas with Onvural. Onvural teaches scheduling packets based on their QoS requirements. Packets can be placed in a queue along with its output time and then transmitted at any time by referring to an index. The index includes the queue along with the earliest deadline output time of the packet in order to transmit the packet according to the packet's QoS requirements. In this manner, packets from one stream having a QoS level of higher importance will be transmitted before packets from another stream having a lower QoS level of importance. Onvural assigns output times based on the packet's QoS and is not designed to "concurrently" transmit several streams, such as in Kangas, but rather transmits packets having an earlier deadline time in any order of queue. It is submitted, therefore, that there is no motivation to use the teachings of Onvural in Kangas.

Additionally, Vermola mentions a time-slice queue, but does not teach using a time-slice queue in order to perform a dejitter process to improve the accuracy of the PCR values embedded in packets. Applicants believe that the 103(a) rejection rendering the present invention unpatentable over the combination of the mention of a time-slice queue in Vermola with the teachings of Onvural and Kangas is not readily apparent. It is respectfully submitted that the Examiner's motivation of using the time-slice queue to ensure that the output is a constant bit stream is insufficient. In particular, Vermola teaches using a time-slice queue for the datagram bursts to produce a stream of datagrams that are not time-sliced. The datagram stream is then substantially continuous and transmitted at a continuous rate, not the time-sliced datagram bursts. It is unclear, therefore, how the time-sliced queues comprising the datagram bursts apply to the teachings of Onvural and Kangas.

Furthermore, newly-added dependent claims 13 and 14 are presented in the event when more than one packet has a common egress time. During this occurrence, the packets are linked together and placed into a common time-slice queue. The queue manager then removes the packets at the egress time on a first-in-first-out basis. It is submitted that Kangas, Onvural, and Vermola, either alone or in combination, do not teach or imply any handling of packets having a common egress time.

It is believed, therefore, that claim 1, as amended, and dependent claims 2-5 and 13-14, which further limit claim 1, are patentable over the cited art.

Along with the limitations of claim 1, claims 6 and 8 further include that, at times, packets have a common output time. In this manner, these packets are linked and placed in a common index in a common time-sliced queue. It is submitted that Kangas, Onvural, and Vermola, either alone or in combination, do not teach or imply linking packets having a common output time. It is submitted,

therefore, that claims 6 and 8, as amended, and their respective dependent claims 7 and 9-12 are patentable over the cited art.

Reconsideration of the claims 1-12 and the newly added claims 13 and 14 is respectfully requested in view of the foregoing amendments and in view of the remarks.

CONCLUSION

The foregoing is submitted as a full and complete response to the Office Action dated May 29, 2007. Claims 1-14 will be pending in the present application upon entry of the present amendment, with claims 1, 6, and 8 being independent. Based on the amendments and remarks set forth herein, Applicants respectfully submit that the subject patent application is in condition for allowance. Because the claims may include additional elements that are not taught or suggested by the cited art, the preceding arguments in favor of patentability are advanced without prejudice to other bases of patentability.

Upon entry of the foregoing Response, the above-identified patent application includes 3 independent claims. Because Applicants have previously paid for 20 total claims and 3 independent claims, it is believed that no additional fee is due. Should it be determined that any excess fee has been received, the Commissioner is hereby authorized to charge any fees which may be required or credit any overpayment to deposit account #19-0761.

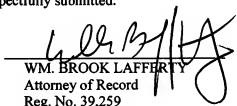
Should the Examiner have any comments or suggestions that would place the subject patent application in better condition for allowance, he is respectfully requested to telephone the undersigned agent at the below-listed number.

Respectfully submitted:

SEND CORRESPONDENCE TO:

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